

Appl. No. 09/634,522
Amendment

Any Dkt. No. 112736-013

REMARKS

During a telephone conversation with the Examiner on December 21, 2004, Arthur et al. (US 5,354,611) and Nagai et al. (US 5,677,045) were brought to the attention of Applicant's Representative as references which could be relied on to reject the claims. Applicant submits this Amendment which distinguishes the present invention from Arthur et al. and Nagai et al.

Prior to this Amendment, claims 1-22, 38-45 and 65-68 are pending in the application. In this Amendment, claims 1-3, 10, 15, 18 and 19 have been amended, no claims have been cancelled, and claims 69-78 have been added. Thus, claims 1-22, 38-45 and 65-78 are pending in the application.

Applicant thanks the Examiner for consideration of this Amendment and invites the Examiner to call Applicant's Representative to discuss any issues with this application.

Independent claims 1, 18 and 19 have been amended to revise the lower end of the range of microspheres. The lower end of the range of microspheres has been changed from 69% to 75%. That amendment is supported by the specification at least at page 2, line 31, page 6, line 21 and page 22, line 8. Accordingly, in claims 1, 18 and 19 the claimed range of microspheres is from about 75% by volume to about 85% by volume.

Arthur et al. (US 5,354,611) pertains to a dielectric composite having a fluoropolymer matrix. Inorganic particles at 20 volume % to 70 volume % are provided in the fluoropolymer matrix. See Arthur et al., column 1, lines 54-57 and column 2, lines 59-68. Arthur et al. simply does not describe or suggest a high microsphere loading of about 75% by volume as claimed by Applicant. Indeed, Arthur et al. actually describes lower microsphere loading volumes. The Arthur et al. preferred upper end of the microsphere loading is 65% volume. See Arthur et al. at column 2, lines 59-68. Furthermore, Arthur et al. describes the inclusion of second inorganic particles (inorganic filler material) such that the combination of the microspheres and the inorganic filler particles does not exceed 70 volume percent. See, Arthur et al., column 6, lines 43-45 and column 7, lines 45-47. Thus, it would not be obvious to modify the dielectric composite of Arthur et al. to have Applicant's high microsphere loading volume of 75%.

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As to Nagai et al. (US 5,677,045), Nagai et al. does not even mention microspheres or microparticles. For example, Nagai et al. shows in Figs. 1-3 of Nagai et al. a woven reinforcement 1, resin 2, and islands 3 which are another resin that is immiscible with the resin 2. There is a phase separation between the two resins 2 and 3. Reference number 3 does not refer to microspheres. Thus, Nagai et al. does not remedy the deficiencies of Arthur et al. if the two references are properly combinable.

Turning to independent claim 15, claim 15 has been amended to define the polymeric material as being cross-linked. That amendment is supported by the specification at page 9, lines 6-9. Further support can be found at page 25, lines 18-19 of the specification which describes a thermoset resin. Thermoset resins are cross-linked resins. New independent claim 69 corresponds to claim 18 prior to this Amendment and including the cross-linked feature. New independent claim 71 corresponds to claim 19 prior to this Amendment and including the cross-linked feature.

Applicant's claimed invention having a cross-linked polymeric or matrix material is significantly different from Arthur et al. Arthur et al. describes the dielectric composite as having a fluoropolymer matrix in which the matrix is a thermoplastic fluoropolymer. See, Arthur et al. at column 2, lines 4-12. Clearly, the Arthur et al. thermoplastic fluoropolymer does not describe or suggest Applicant's claimed cross-linked matrix material. The Arthur et al. thermoplastic material can be softened by heating whereas Applicant's thermoset material is not softened by heating. This is a significant difference in the two types of materials.

Furthermore, Applicant submits it would not be obvious to modify Arthur et al. to replace the thermoplastic material with a cross-linked or thermoset material. Arthur et al. explicitly states that its material is thermoplastic. Applicant submits that replacing the thermoplastic material with a cross-linked (thermoset) material would be against the teachings of Arthur et al. Even further, the use of a thermoset material in the dielectric composite of Arthur et al. for a printed wiring board (PWB) may tend to cause the problems as a thermoset material does not soften at high temperatures.

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The dependent claims have been amended to be consistent with their respective independent claims. Also, the dependent claims are allowable at least for the same reasons that the independent claims are allowable.

Thus, Applicant submits that the all of the claims are allowable.

CONCLUSION

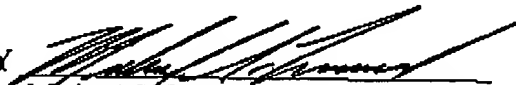
For the foregoing reasons, Applicant submits that the patent application is in condition for allowance and requests a Notice of Allowance be issued.

Respectfully submitted,

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